

reactor through the inlet 120. Oxygen gas of at least 80 % concentration is introduced in the reactor through the gas inlet 100. The shaft 107, which is hollow, recirculates the oxygen and water vapor from the orifice 115 to the turbine 112. Th recirculation allows 100 % consumption of the gas and therefore no gas outlet is required. The orange liquor exits through the liquor outlet 117. In yet another embodiment, shown in FIGURE 6, the oxygen-containing gas is introduced from a perforated pipe 125 located under the turubine. The unreacted oxygen is then recirculated through the shaft 107. In another embodiment, FIGURE 7, a gas with inerts greater than that found in commercially pure oxygen is introduced through the inlet 125. A large fraction of the unreacted oxygen-inert mixture is recirculated through the hollow shaft 107. A smaller fraction of the unreacted mixture is removed via a purge 127 which controls the oxygen partial pressure. In another embodiment, FIGURE 8, another turbine 140 is added to maintain the catalyst in suspension. In yet another embodiment, FIGURE 9 shows that the oxygen-containing gas is recirculated through a double envelope 142 around the shaft 107 of the reactor. In another embodiment, FIGURE 10, the oxygen-containing gas is introduced 150 directly in the double envelope 142 of the shaft 107.

IN THE CLAIMS:

Please amend the claims as follows.